Outlining a scholarly workbench – publication and data as a continuum

Laurent Romary

Outlining a scholarly workbench – publication and data as a continuum

Laurent Romary
INRIA & Humboldt Univ. Berlin

Overview

- A scientific information policy viewed from the point of view of research repositories
- Publication repositories
  - Where do we stand, where do we want to go?
  - Theory and practice
- Can this be a basis for a more global view of a research repository?
  - The case of textual information
- How can we shape the future of research repositories?

A personal view

- Research bias
  - Computational linguistics
    - A multidisciplinary field
  - Publications: importance of conferences, long-standing culture of publication repositories
    - Cf. stats in HAL
  - Data: linguistic corpora, annotations, lexical databases, grammars, etc.
    - Standards…
- Scientific Information bias
  - Scientific information development in research organizations and research communities

In the beginning was science…

- A scholar-centered perspective
  - Exploring new fields
    - Knowing what is new in his field: publications
    - Scrutinizing what the others are doing: experiments, data, sources
  - Making “discoveries”
    - Assessment by peers (certification)
    - Communicating to others
  - Organizing research
    - Setting up teams, projects, equipments
    - Applications, reports, assessments

Scientific information management

- Providing the researcher with the means to work
  - Providing access to publications
    - Subscription policy
  - Giving him the means to record and disseminate his activity
    - Research repository

- Difficulties
  - Cope for the high costs of traditional scholarly publishing
  - Accommodate with the development of new technologies
  - Getting a comprehensive view on the researcher’s production

Scholarly publishing

- Certification
  - Management of the peer-reviewing process
- Dissemination
  - Reaching out libraries, scholars
- Long-term availability
  - Permanent reference and access

- Basic terminology
  - Stage 1: author's draft for review
  - Stage 2: author's draft after review
  - Stage 3: publisher's version after copy-editing

Publication repositories

- Intended to deal with the dissemination and long-term availability functions
- Open access: a means for an end
  - Increasing the accessibility of scholarly results
  - Complementary to the certification process
- Components of a publication repository
  - Technical infrastructure – digital object management
  - Editorial support – content management, quality assessment (e.g. affiliations)
  - Political environment – who wants a repository and to which purpose

To be or not to be central…

- Technical infrastructure (IT)
  - Need not be duplicated
  - Constant development of new services
- Editorial support (Library)
  - Needs to be close to research environments
  - Needs further functionalities (hidden to researchers)
- Political environment (Research management)
  - Needs to be concerted across institutions
  - Compromise between institutional visibility and coordination of available means
  - Research repository policy cannot be disentangled from SI policy (e.g. Springer-MPS)

But let’s forget about concepts…

Why do I use a publication archive?

- Record of my production
  - My publications on HAL
- Quick delivery to others
  - Write, deposit, give away
- Because I believe in open access?
  - Maybe a bad argument
    - Would I write without the perspective of an “official” publishing?
    - Would I want to avoid peer-review?
      - No. Relying on the recognition from my colleagues
      - Yes. If I would know my results would be used and attributed/recognized
  - Objective view
    - Happy to find papers from colleagues on google
    - Aware that putting my own work is an overhead
- Things are made easier thanks to a good infrastructure

HAL – a quick overview

- Put together in the mid 90's as a mirror to ArXiv
  - Political independence, difficulty to get additional functionalities – arxiv as a close environment
  - Initiated by physicists, within CNRS
- Wider impact around since mid 2000's
  - Multidisciplinary: maths, human sciences, computer science
  - Multi-institutional: INRIA, INSERM, Universities
  - HAL has become a national publication repository

Why do I use HAL(-INRIA)?

- Because it's visible
  - Ranking Web of World Repositories
  - My colleagues will easily find my publications: Google search [Laurent Romary standards]
- Because I feel at home
  - HAL-INRIA
  - Within one single instance of HAL: Generic HAL
- Because it has a couple of cool features
  - Online legibility: Romary & Armbruster, 2010
  - Facilitated deposit (affiliation): HAL-Deposit
  - Publication lists: Haltools
- Because INRIA has cool librarians…
  - Completion, correction, interaction, support

What do I expect now?

- (even) Easier submission
  - What should I type in information which is already in the document I am depositing?
- Better statistics
  - HAL - Stats
  - Evolution of access over time
  - Source of download requests
- Better workspace functionality
  - Creating, managing and disseminating collections
  - Adding research material (e.g. TEI encoded dictionary samples)
- Better connection with other publication services
  - Google scholar, WoZ, Microsoft academic search
  - Duplicates, missing entries, bad affiliation, no link to HAL…

Putting intelligence into the repository

I have a dream…

Level 1 – getting started quickly

- Managing authors
  - One's own identity — default author, default affiliation(s)
  - Co-authors — favorite co-authors, favorite co-institutions
- Managing institutions
  - Reliable authority list of institutions and laboratories
  - Favorite co-institutions
- Managing publication loci
  - Journal list, conferences
- Managing publications
  - Duplicates, corrections, completions

Level 2 – the repository as a tool

- Researcher workspace
  - Small scale (cf. dream)
- Institutional workspace
  - The repository as a reporting tool
  - (cf. HAL: exports for the annual report)
- Statistics
  - The repository as an indicator of scientific influence
  - From citation (in publications) to usage (downloads)
- Deep interoperability
  - High quality data for high quality services
  - Exports – imports, etc.
  - Harvesting, indexing: Beyond OAI-PMH
  - Anticipating the transition from metadata to full-text management

Level 3 – bringing intelligence in the repository

- If only the repository had some knowledge about the data itself
  - Bringing-in data automatically
    - From publishers to repositories
  - Extracting information from documents
    - Typing-in information once and for all
  - Providing specific services for semi-structured datatypes
    - E.g. Synthetic views on a publication
- Two examples: the PEER project, the Dariah TEI demonstrator

Intermezzo – the Text Encoding Initiative (TEI)

The Text Encoding Initiative

- Initiated in 1987 by major international text centers
  - Adoption of SGML, than XML
  - Important contributions to the development of XML
- Organized as a membership consortium since 2000
  - 5 hosts (Virginia, Brown, Oxford, Nancy, Leithbridge)
  - Board (management) and council (technical content)
- Five editions of TEI guidelines (current P5)
  - Large community of users, continuous maintenance of content, evolution towards additional domains (e.g. manuscript transcription)

Main technical features of the TEI

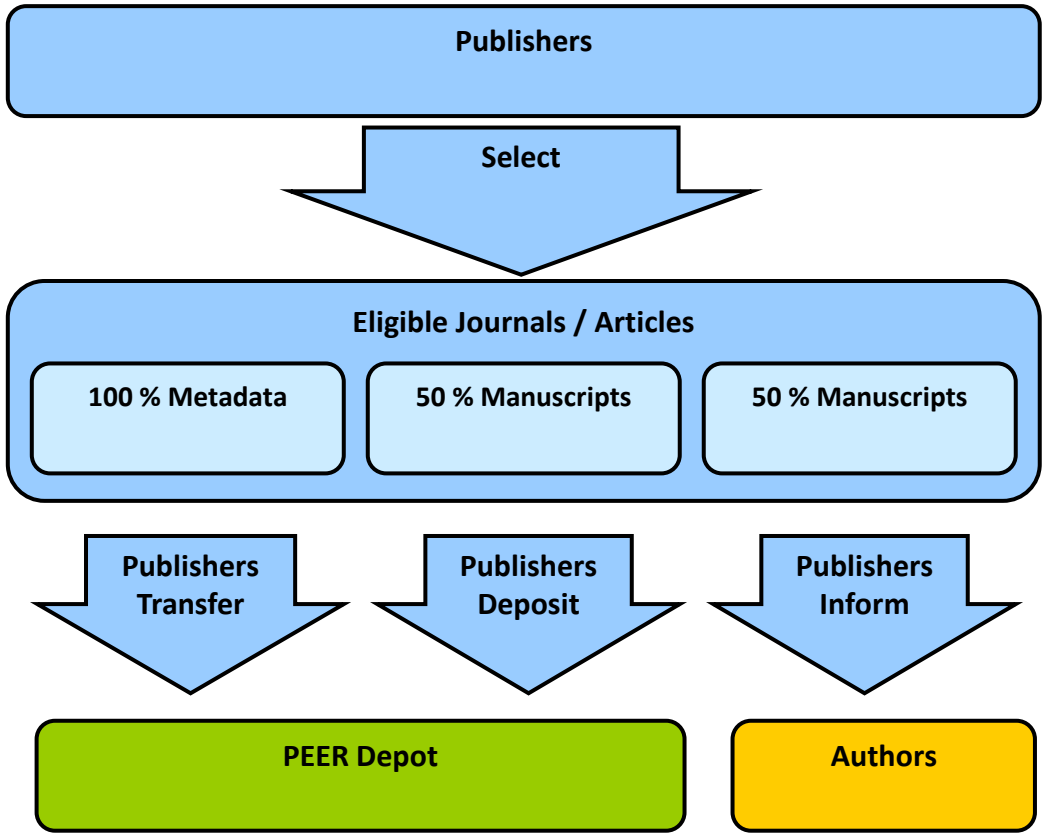
- More than 500 elements
- Modularity
  - Core modules
    - header text descriptions; bibliography
  - Thematic modules
    - drama; dictionaries; manuscript description
  - Additional components
    - time, names and dates; annotations;
- Customizability
  - ODD (one document does it all): specification language of the TEI
- Mime type: application/xml+tei

A project with a vision: PEER

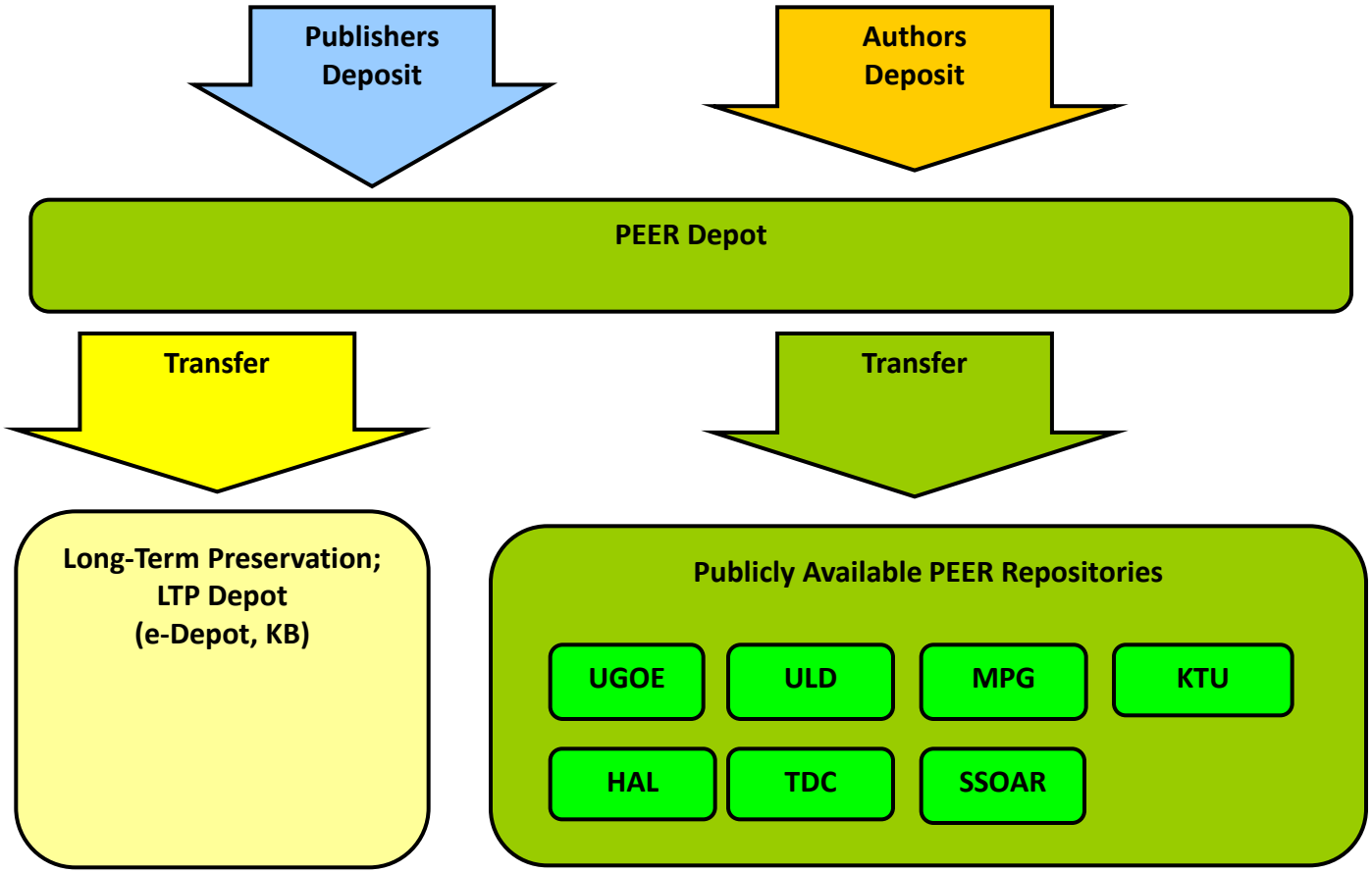
The PEER project

- Initiated by the EU commission (DG INFSO)
- Objective: study the impact of systematically archiving *stage-two* outputs in "institutional repositories"
  - on journals and business models
  - on wider ecology of scientific resarch
- Consortium
  - STM, European Science Foundation (ESF), Goettingen State and University Library (UGOE), Max Planck Gesellschaft (MPG), INRIA

Content submission - publishers



Content submission – to repositories & LTP archive



Publishers involved the project

- BMJ Publishing Group (proprietary format)
- Cambridge University Press (NLM2.2)
- EDP Science (NLM3.0)
- Elsevier (proprietary format)
- IOP Publishing (NLM3.0)
- Nature Publishing Group (proprietary format)
- Oxford University Press (ScholarOne)
- Portland Press (NLM2.0)
- Sage Publications (proprietary format)
- Springer (proprietary format)
- Taylor & Francis Group (ScholarOne)
- Wiley-Blackwell (ScholarOne)

The information chaos

- Article title
  - article-title/title | ArticleTitle | article-title | ce:title | art_title | article_title | nihms-submit/title | ArticleTitle/Title | ChapterTitle
- Journal title
  - j-title | JournalTitle | full_journal_title | jrn_title | journal-title
- ISSN (print)
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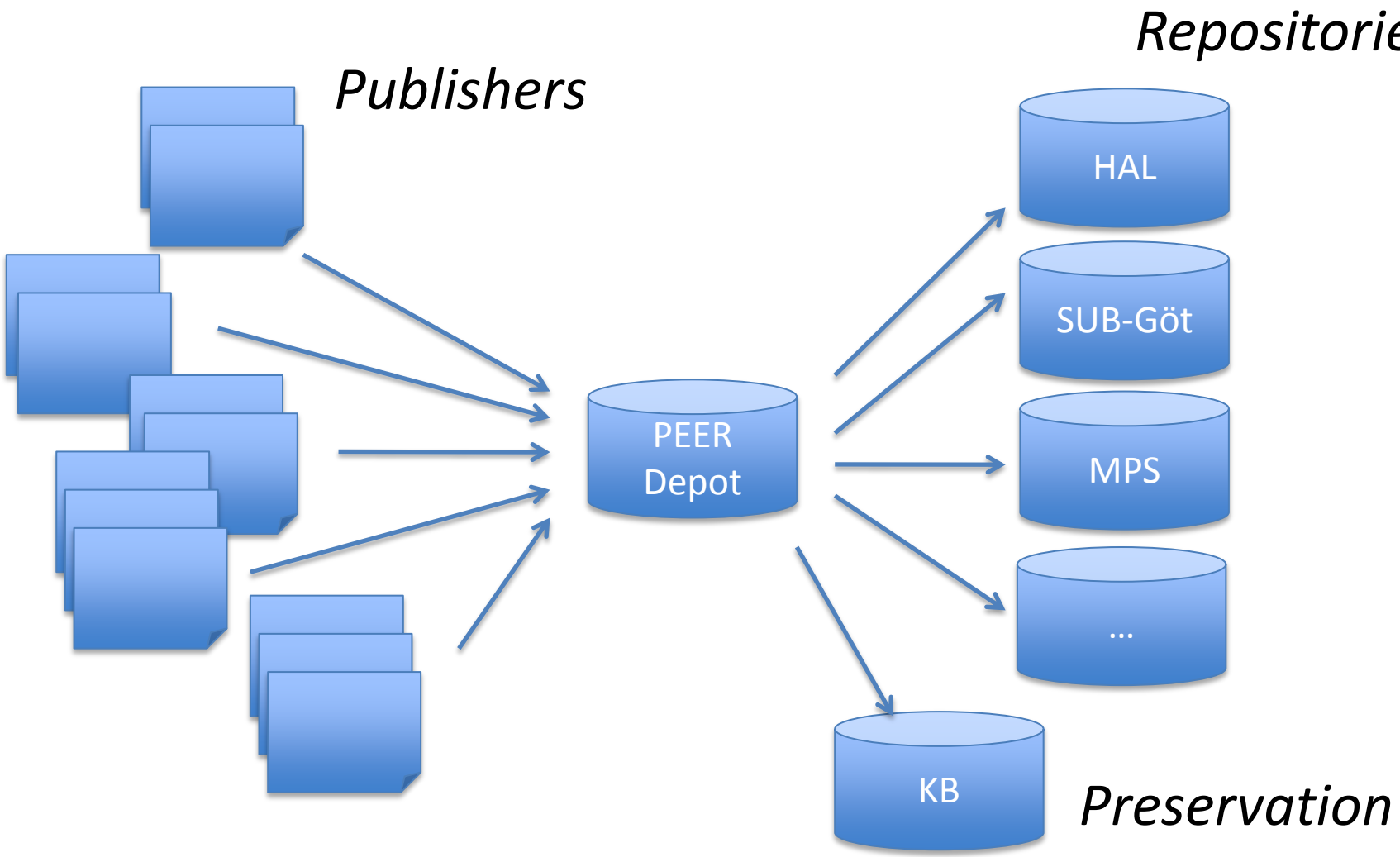
The PEER deposit workflow

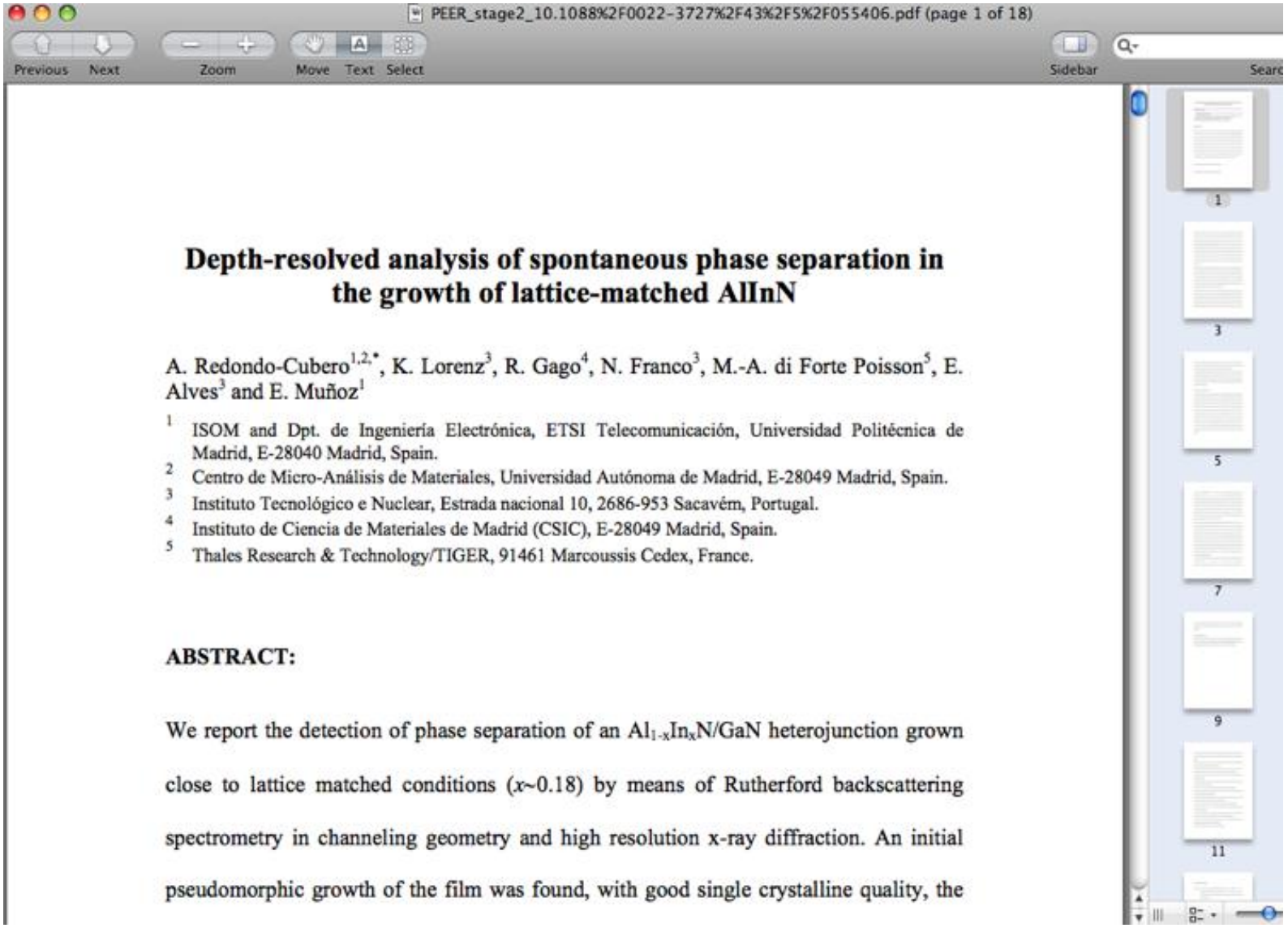


TEI as a pivot format for interchange

- General strategy: no information should be lost
  - Nearly everything in <sourceDesc>
  - + Keywords, Summary, Copyright
- Strict author description
  - Deep encoding of names
  - Deep encoding of affiliations (Web of Science - 3-level)
  - Deep encoding of addresses – getting the country right
- Precise publishing information
  - Pagination, DOIs, volume, issue, journals name(s)
  - Yes, <biblStruct> is cool!

… And when no metadata is available

Metadata extraction from front page



Depth-resolved analysis of spontaneous phase separation in the growth of lattice-matched AlInN

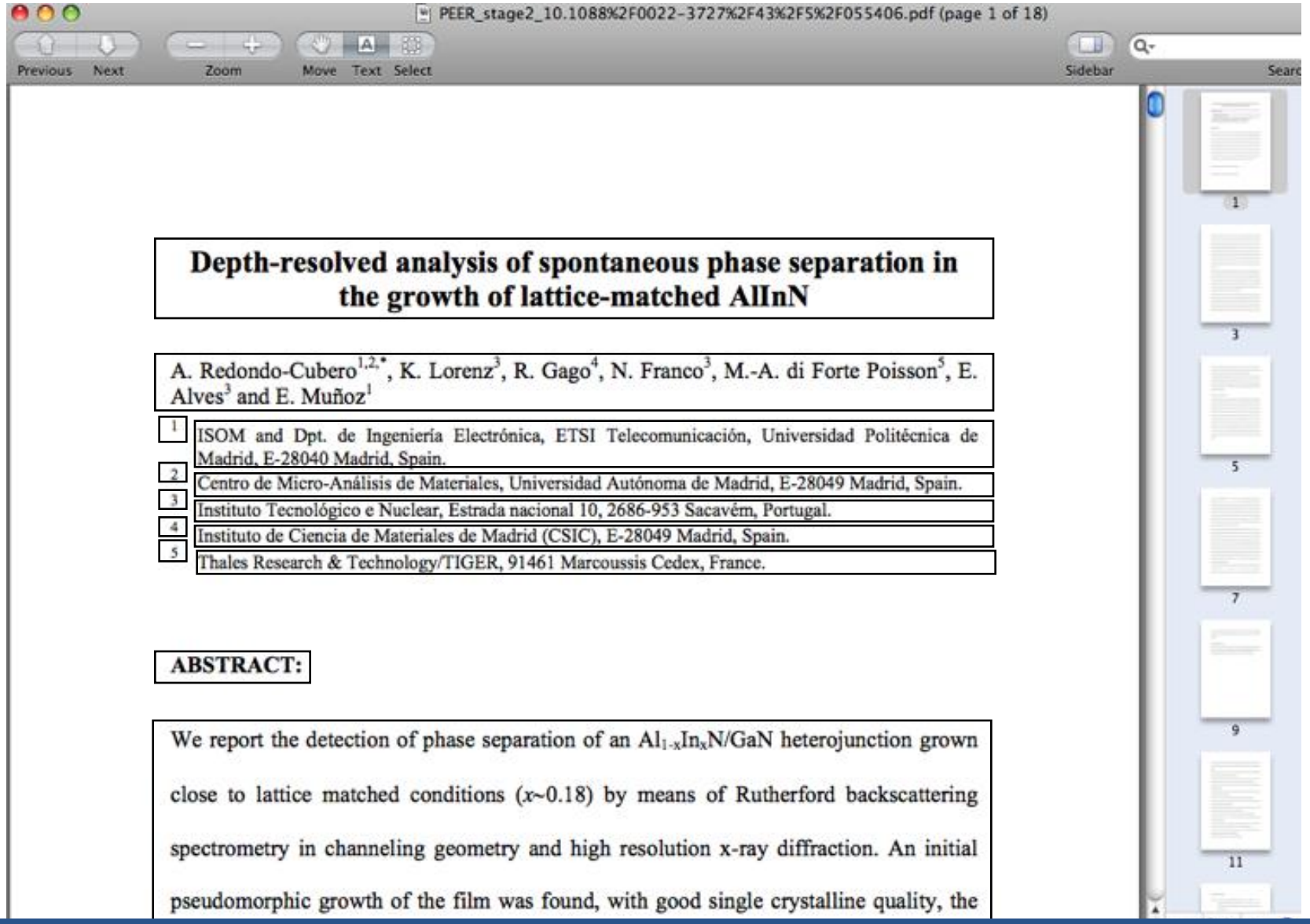
A. Redondo-Cubero[1,2,*], K. Lorenz[3], R. Gago[4], N. Franco[3], M.-A. di Forte Poisson[5], E. Alves[3] and E. Muñoz[1]

1 ISOM and Dpt. de Ingeniería Electrónica, ETSI Telecomunicación, Universidad Politécnica de Madrid, E-28040 Madrid, Spain.
2 Centro de Micro-Análisis de Materiales, Universidad Autónoma de Madrid, E-28049 Madrid, Spain.
3 Instituto Tecnológico e Nuclear, Estrada nacional 10, 2686-953 Sacavém, Portugal.
4 Instituto de Ciencia de Materiales de Madrid (CSIC), E-28049 Madrid, Spain.
5 Thales Research & Technology/TIGER, 91461 Marcoussis Cedex, France.

ABSTRACT:

We report the detection of phase separation of an $Al_{1-x}In_xN$/GaN heterojunction grown close to lattice matched conditions (x~0.18) by means of Rutherford backscattering spectrometry in channeling geometry and high resolution x-ray diffraction. An initial pseudomorphic growth of the film was found, with good single crystalline quality, the

Layout & Block Analysis: XY-Cut algorithm



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Metadata extraction from front-page

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Metadata extraction from front-page

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ray diffraction. An initial pseudomorphic growth of the film was found, with good single crystalline quality, the nominal compositio
</biblStruct>
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What do we have there?

- A coherent infrastructure to facilitate
  - The long-term management of scholarly content in research institutions
    - In-depth representation of bibliographical data
  - Smooth interaction between publishers and research institutions
    - Better understanding of what each of us can provide
    - E.g. Gold open access (cf. Springer-MPS)
  - Integration of legacy document within a repository
  - Pushing publications to other repositories
    - Institutional–thematic repositories

Intelligent management of content

The “TEI repository”

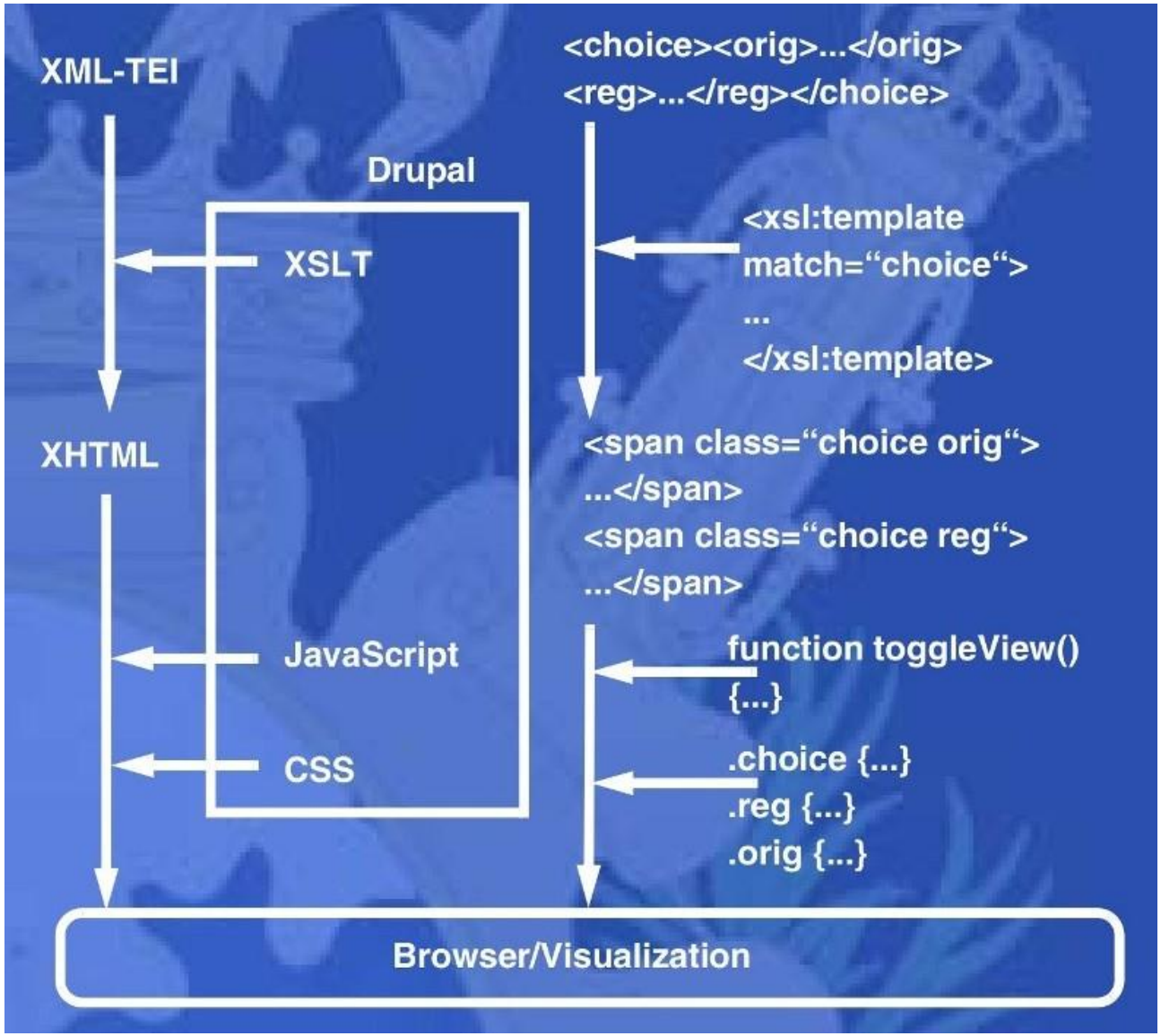
Why a “TEI repository”?

- The continuum of full-text document
  - Publications – cf. Language Description Heritage
  - Primary sources
  - Further commentaries
- Various forms of intelligence
  - Manipulated like other items in the repository
    - Submit, publish, Meta-data search, presentation lists
    - Texts as accessible objects (decapsulation)
  - Basic understanding of data structure
    - Format checking, preview, content based search
  - Connection to external resources or tools
    - Decapsulation – limiting the intelligence

Why a “TEI repository”? – cont.

- Because scholars need it!
- Isolated researchers
  - Sebastian Pape, Christof Schöch, Lutz Wegner: “Bringing Bérardier de Bataut's Essai sur le récit to the web: Editorial requirements and publishing framework”, TEI Member's Meeting and Conference 2010, University of Zadar, Kroatien.
  - Bérardier de Bataut's Essai sur le récit
  - Online report
- Research projects
  - Peter Stadler, “Building a historical social network from TEI documents”, TEI Member's Meeting and Conference 2010, University of Zadar, Kroatien.
  - https://194.94.229.134/wega/xql/index.xql

Bérardier - transformation process



An opportunity

- DARIAH – research infrastructure for the humanities
  - ESFRI roadmap
  - Preparation phase – coord. DANS (NL)
- Experimenting researchers' environments within DARIAH
  - "Working for the poor": offering a simple workspace for eScholars working on digital documents and collections
  - Deposit, describe, visualize, publish
- Demo: TEI Repository

Next step – virtual research

Not a completely impossible idea

- Virtual astronomers
  - Most of them now are
  - Many do not even see a telescope
  - Huge databases of stellar objects, observations (multi-range) an publication data
- Virtual humanists
  - Progress in the humanities results from pooling together sources
  - Transcribing and studying sources are not necessarily part of the same research activity
  - Need for attribution-recognition mechanisms
    - Cf. report to DG INFSO: Riding the wave
  - Are we able to design the adequate environments for them?

We can probably try conclude…

- The “Scholarly Workbench” never existed as an isolated entity – good thing
  - No separation between publication and data
  - Nothing like a generic research data environment
    - Specific datatypes: text, images, geo-temporal information
    - Specific scholarly communities
- Lessons to be learnt for a scientific information policy
  - No rush, be consequent
  - Keep all developments within a global strategy
  - Take benefits from available/demanding communities — be opportunistic
  - Services, services, services…
- Mühsam, mühsam ernährt sich das Eichhörnchen